

WHAT IS CLAIMED IS:

1. In a vial autosampler having a vial cup adapted to contain a vial having a stir member therein, a vial mixing system comprising:
 - an actuator; and
 - a mixing hub operably coupled to the actuator and having at least one magnetic field source disposed to rotate a magnetic field about the vial cup.
2. The system of claim 1, wherein the actuator is a rotary motor.
3. The system of claim 2, wherein the actuator is coupled to the hub by a belt.
4. The system of claim 1, wherein the at least one magnetic field source rotates about the vial.
5. The system of claim 1, wherein the at least one magnetic field source comprises a pair of magnets.
6. The system of claim 1, wherein the at least one magnetic field source comprises a rectangular magnet.
7. The system of claim 1, and further comprising at least one fin mounted to the mixing hub

to generate airflow with respect to the vial cup during rotation.

8. The system of claim 1, and further comprising a thermoelectric device couplable to the vial cup.

9. The system of claim 1, wherein the at least one magnetic source consists of a single magnet.

10. The system of claim 1, wherein the hub includes a central passageway to permit needle rinsing.

11. A method of mixing a sample in a vial, the method comprising:

providing a stir member within the vial that is affectable by a magnetic field;
generating a magnetic field proximate the stir member; and
rotating the magnetic field about the vial.

12. The method of claim 11, wherein the rotational speed is varied as a periodic function of angular position.

13. The method of claim 12, wherein the periodic function is a sine function.

14. The method of claim 11 and further comprising generating airflow around the vial.

15. The method of claim 11, wherein rotating the magnetic field about the vial includes rotating a magnetic source about the vial.

16. The method of claim 11, and further comprising:

raising the vial while the magnetic field rotates about the vial.

17. The method of claim 11, and further comprising:

lowering the vial while the magnetic field rotates about the vial.

18. A vial autosampler comprising:

means for storing vials;

means for moving vials from the means for storing vials to a means for analyzing samples; and

means for agitating the samples.

RECORDED IN U.S. PATENT AND TRADEMARK OFFICE